

Colorado River Aquatic Biologists 2015

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- Utah Division of Wildlife Resources



Lake Level

• Year	High	Low
• 2010	3638	3618
• 2011	3660	3609
• 2012	3639	3609
• 2013	3609	3584
• 2014	3609	3574
• 2015	3596 in January	

Shad Caught in Trawl

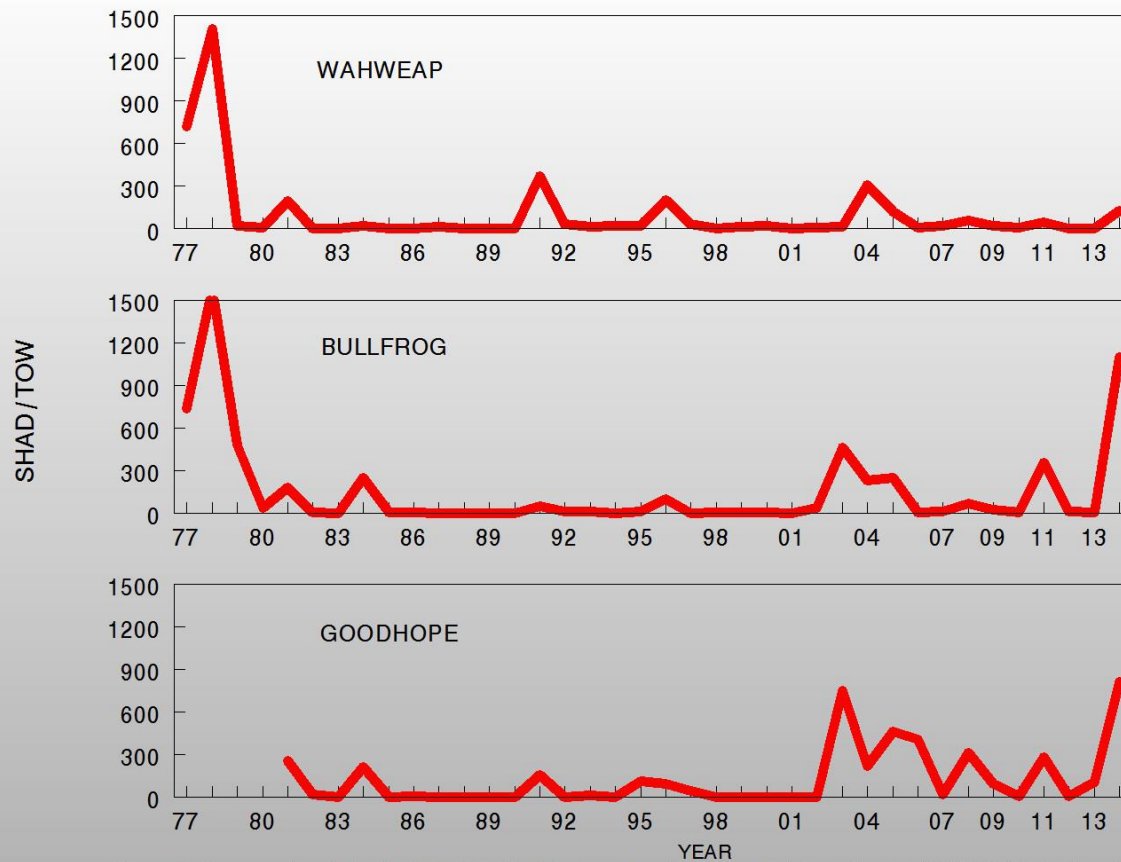


Figure 4. Mean number of shad collected per trawl tow, averaged from July and August trawls, 1977-2014, Lake Powell.

Fishery Rejuvenated 2014

Due to Forage Increase

- Threadfin Shad peak – Why?
- Gizzard shad constant
- Striped bass young population
- Largemouth bass recovered
- Walleye
- Smallmouth bass



Future of Lake Powell Fisheries?

- QM veligers found in 2012
- Adult mussels found in 2013
- Invasion covered lower 15 miles of lake
- Winter 2014





Single Mussels found uplake

- 2 mussels found in Bullfrog Bay
- 95 miles uplake (boats move freely)
- Complete infestation may take 5 years





Lake Huron

Recent Food Web Alterations -Lake Huron's Main Basin-



Zebra mussels



Round gobies



Quagga mussels



Diporeia
Geddie begins



Zooplankton
decline



Alewife
collapse

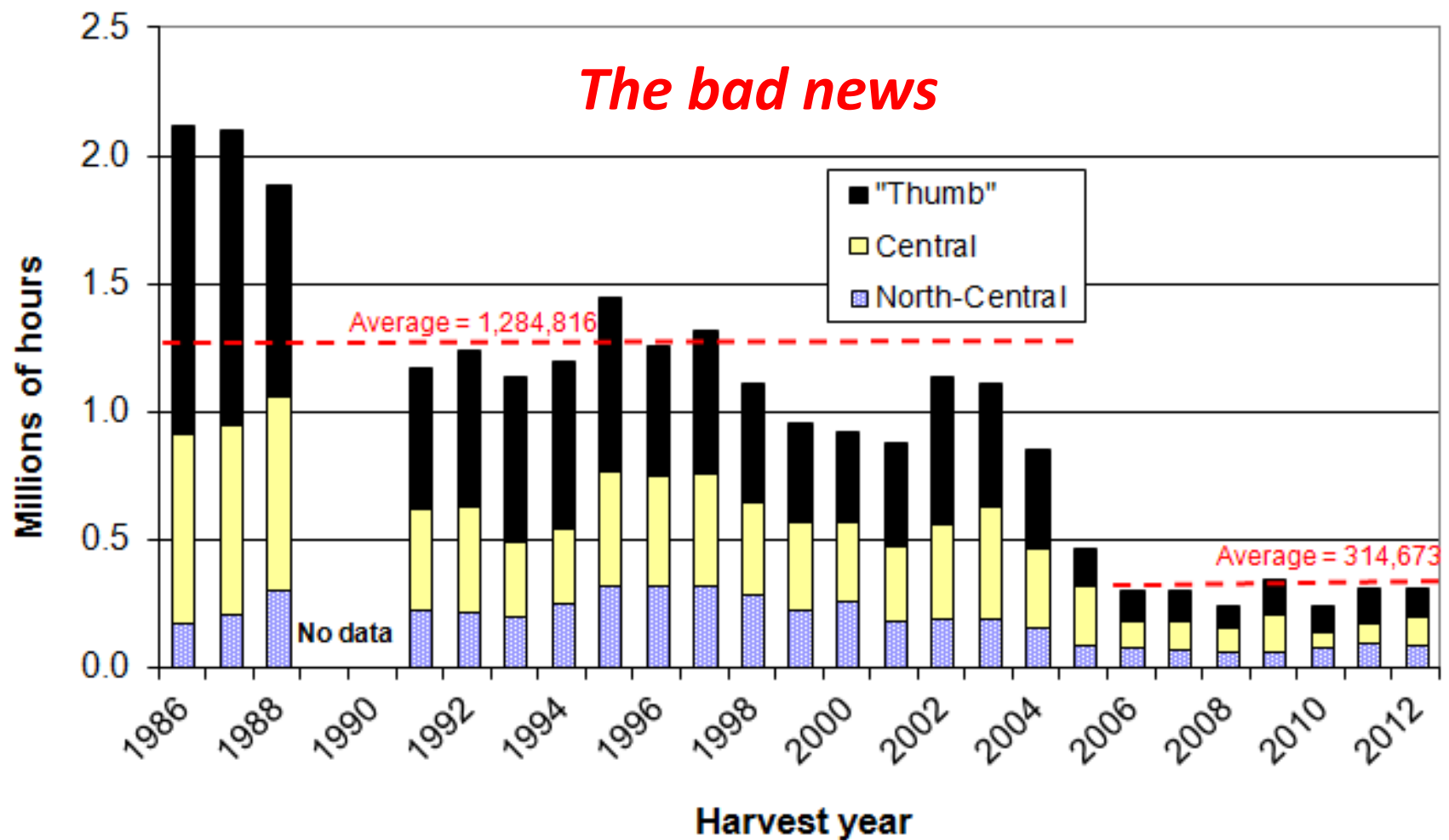


Angler
use declines

Chinook
decline



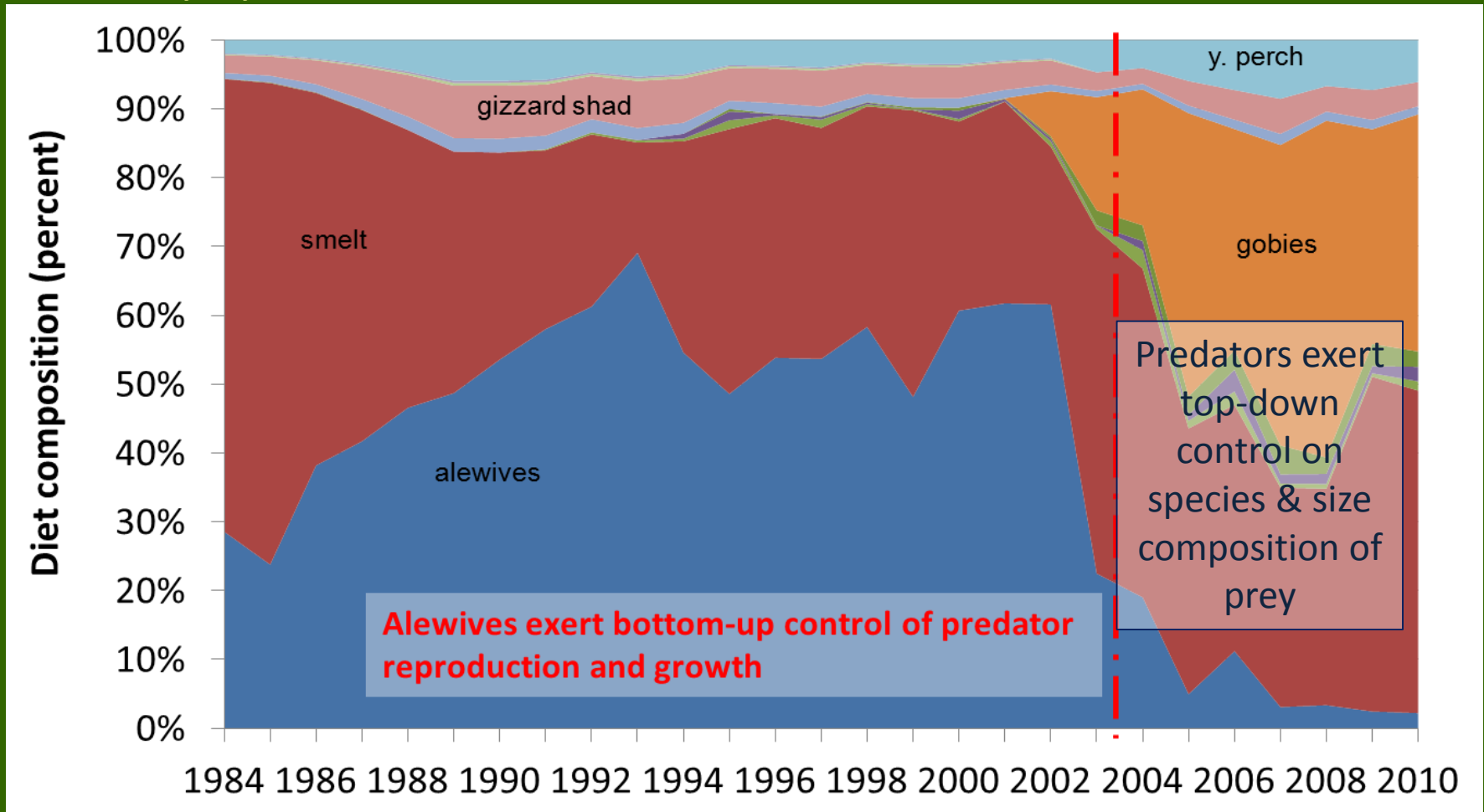
Trends in fishing hours, 10 Main Basin Index Ports, Lake Huron



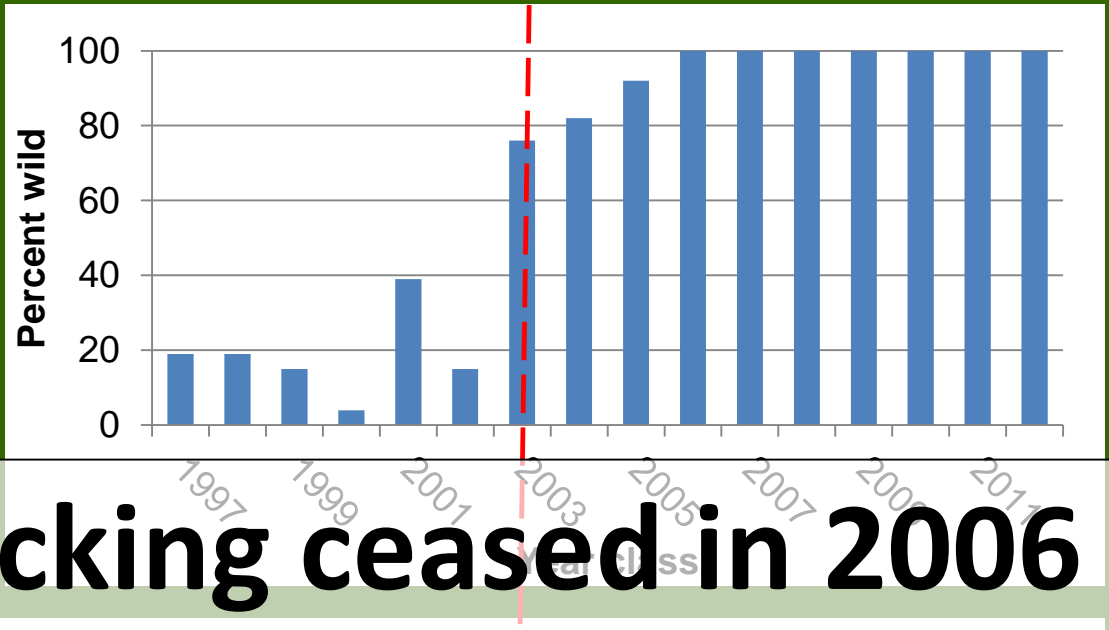
Main Basin (salmon/trout) port fishing effort has declined 76%

Change in relative effects: top-down vs bottom-up

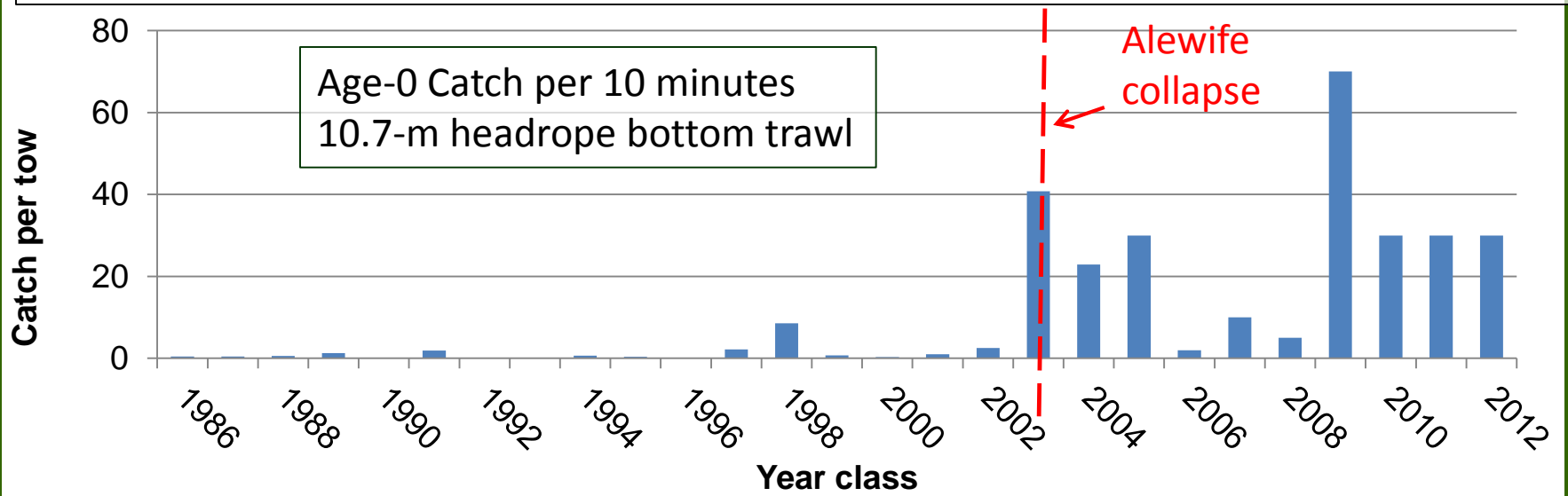
Piscivory by LAT, WAE, and CHS



Walleye reproduction



Walleye stocking ceased in 2006



Algal Blooms

- Cladophora in Great Lakes – Dead Zones



Linda Preskitt

Microsystis - Polluted water

Possible Psuedofeces result



Lake Havasu

- Bass fishing much improved
- World record Redear sunfish
- Warm water reducing mussels from upper 18 feet –
- Surface temperature 88 F
- Striped bass not abundant
- Shad status not known



Lake Mohave

- Bass fishing good
- Striped bass in low numbers
- Shad low in numbers
- No Redear Sunfish
- Lake Mead Tail water cools upper lake
- Good habitat for stripers and mussels

Lake Mead

- Striped bass declining –but good condition
- Largemouth bass declining
- Smallmouth Bass maintaining
- Shad – peak year

Lake Powell Food Web

- Current food web
- Plankton>Shad>Stripers
- Plankton>shad, sunfish or crayfish>Bass

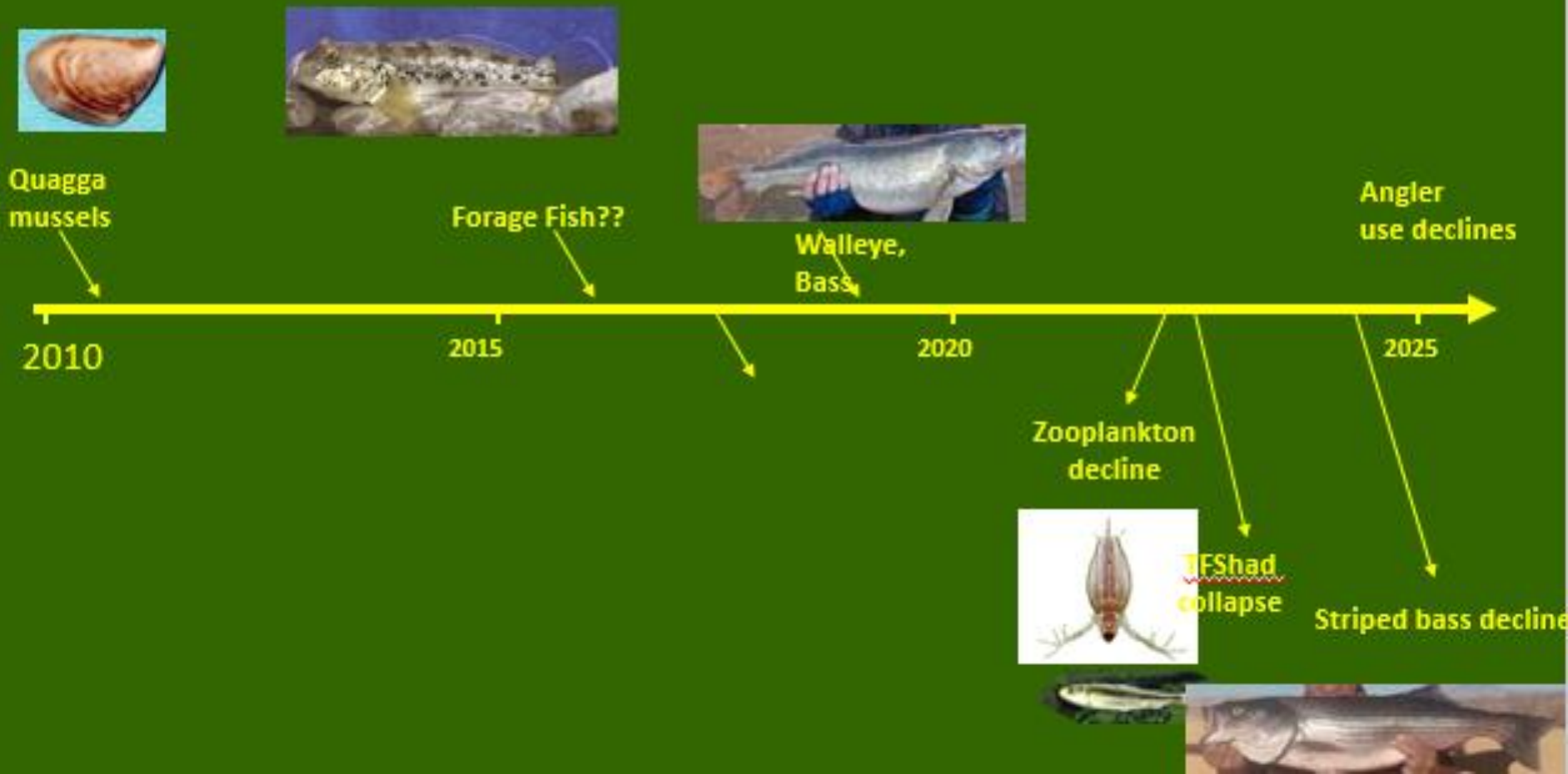


New Food Web

- Nutrients, plankton>mussels> **mussel predator?**>game fish
- Stripers and shad likely to decline
- Walleye and smallmouth likely to maintain



Lake Powell Food Web Alterations



Fine for Moving Mussels

- Fiesta Queen - Hwy by Lake Powell
- \$4,500 fine
- Ocean Vessel – Great Lakes - \$3,000 fine
- 1 in 2010



Conclusion

- Future Lake Powell fishery is dependent on capturing energy diverted by mussels and transmitting that energy to sport fish.
- First step is to learn which food web will be the most effective in mussel-infested Lake Powell.
- Management action needed to **DIRECT** establishment of new food web.

Questions



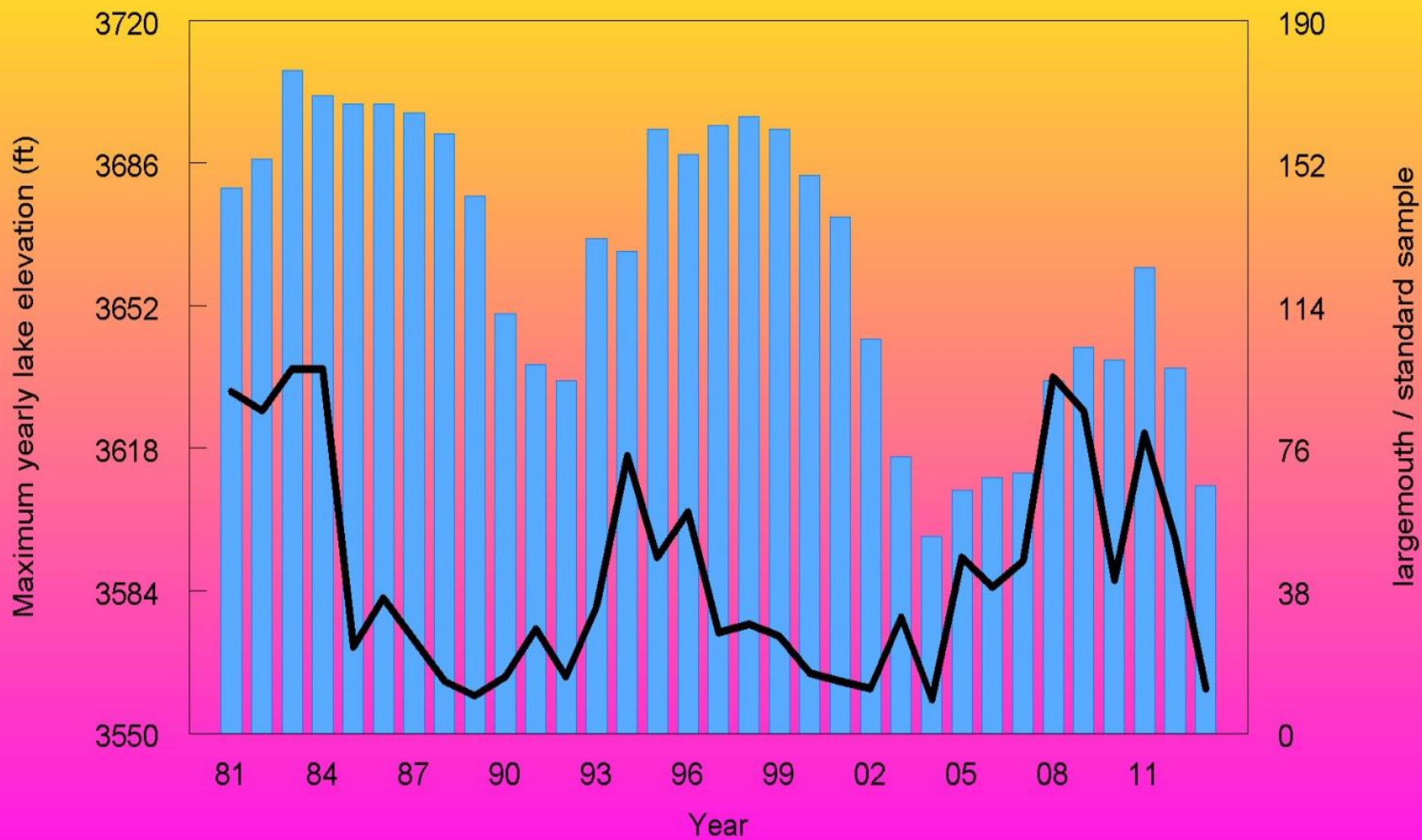


Figure 1. Relationship between maximum yearly water elevation (bar) and number of Largemouth Bass collected from annual fall gill-net survey (line), Lake Powell, UT, 1981 - 2012.

Shad Abundance - Striped Bass Condition

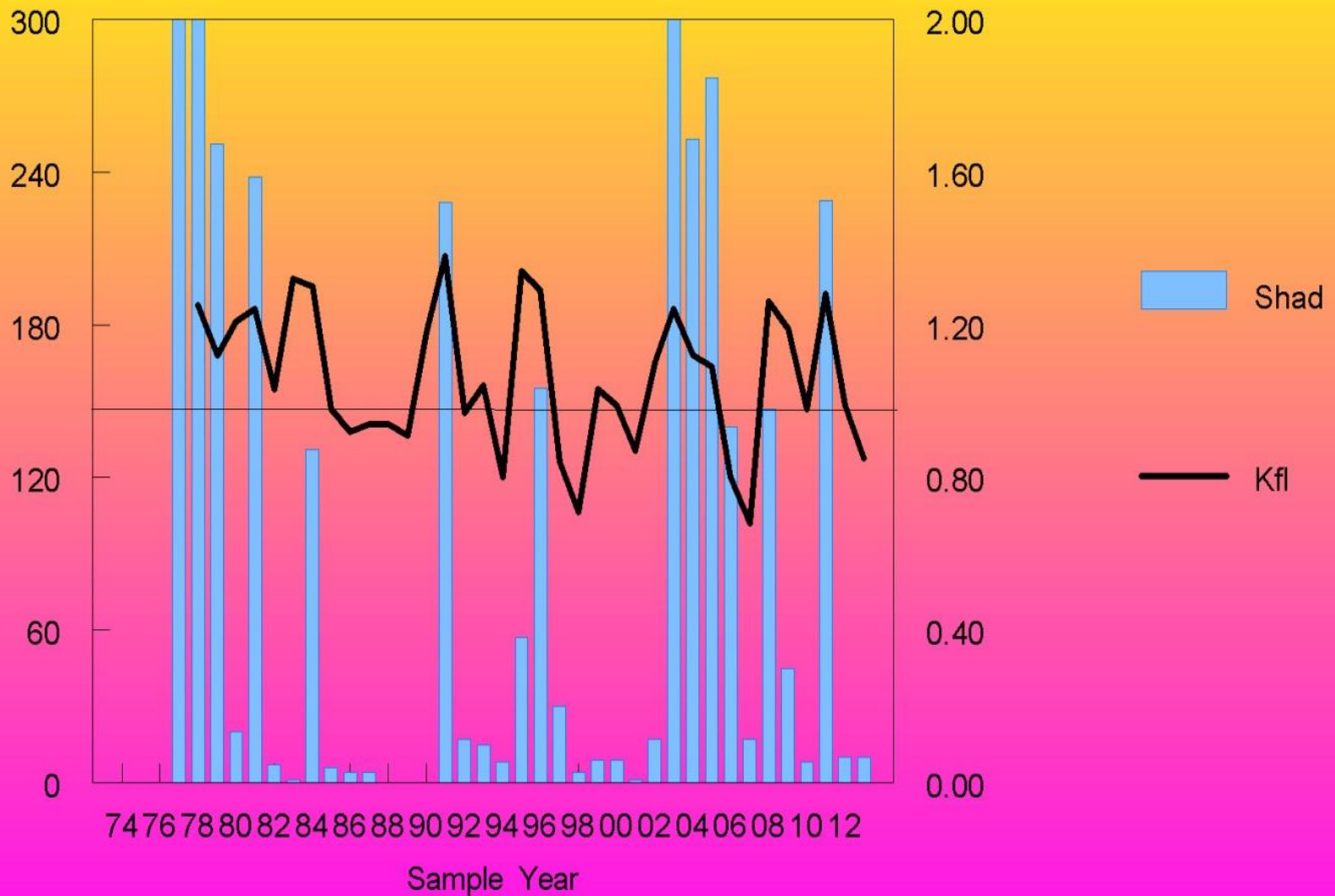


Figure 2. Pelagic shad abundance compared to adult striped bass condition, K(fl), 1976-2012, Lake Powell.